Ecological Indicators 101 (2019) 973–974

Contents lists available at ScienceDirect

Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind

Letter to the Editor

"Prediction of effective climate change indicators using statistical downscaling approach and impact assessment on pearl millet (*Pennisetum glaucum* L.) yield through genetic algorithm in Punjab, Pakistan" by Asmat Ullah, Nasrin Salehnia, Sohrab Kolsoumi, Ashfaq Ahmad, Tasneem Khaliq

1. Introduction

In recent years, optimization algorithms have been very helpful in solving engineering problems (Fijani et al., 2019; Yaseen et al., 2019; Moazenzadeh et al., 2018). In particular, many studies in eco-informatics field have recommended the optimization algorithms by solve environment issue (Fahimi et al., 2017; Ghorbani et al., 2017; Moazenzadeh et al., 2018; Jahani and Mohammadi, 2018; Kisi and Yaseen, 2019). This optimization method, if correctly conditioned, can become a powerful tool for solving nonlinear ecologic parameters (Moazenzadeh et al., 2018; Ghorbani et al., 2018). Research on bio-inspired algorithm methods can be useful if provided that the details of these methods and optimal parameters is available for readers. In this discussion, the discusser has tried to clarify the process of the paper of "Prediction of effective climate change indicators using statistical downscaling approach and impact assessment on pearl millet (*Pennisetum glaucum* L.) yield through Genetic Algorithm in Punjab, Pakistan" (doi: https://doi.org//10.1016/j.ecolind.2018.03.053). The discusser would like to call attention to an important point, which may be taken into consideration by the authors and other potential researchers. This manuscript focuses on Prediction of effective climate change indicators using statistical downscaling approach and impact assessment with genetic optimization algorithm. There is ambiguity in the original article that if this ambiguity was to be resolved, the original article could be more useful to readers.

The authors said (Ullah et al., 2018) that the accuracy of genetic algorithm largely depend on the algorithm parameters. As the authors know, the performance of genetic algorithm is greatly affected by the algorithm parameters including population size, mutation rate and number of generations (Kim et al., 2019; Whitley, 2019; Jahani and Mohammadi, 2018). However, they did not provide the optimal values of the control parameters mentioned in the study. Did they use trial and error or some other method to identify the optimal parameters for genetic algorithm? This needs explanation. All the model parameters should be provided in the study by the authors. In this way, the discusser wants the authors of the original paper to provide exactly the parameters used in the original article. So this information will be useful for other researchers.

2. Conclusion

It is important to provide optimization details for an ecological phenomenon for researchers so that future researchers can model the modeling process again for their other purposes (Moazenzadeh et al., 2018; Mohammadi, 2019). Therefore, in parameter of genetic algorithm and how to implement the optimization and how to select algorithm optimize result should be clearly stated to be useful for all researchers. So the discusser invites the authors of the original essay to clarify their article and modify the items described, to improve the original paper quality and resolve the ambiguities mentioned.

References

Fahimi, F., Yaseen, Z.M., El-shafie, A., 2017. Application of soft computing based hybrid models in hydrological variables modeling: a comprehensive review. Theor. Appl. Climatol. 128, 875–903. https://doi.org/10.1007/s00704-016-1735-8.

Fijani, E., Barzegar, R., Deo, R., Tziritis, E., Konstantinos, S., 2019. Design and implementation of a hybrid model based on two-layer decomposition method coupled with extreme learning machines to support real-time environmental monitoring of water quality parameters. Sci. Total Environ. 648, 839–853. https://doi.org/10.1016/j.scitotenv.2018.08.221.

Ghorbani, M.A., Deo, R.C., Yaseen, Z.M., Kashani, M.H., Mohammadi, B., 2017. Pan evaporation prediction using a hybrid multilayer perceptron-firefly algorithm (MLP-FFA) model: case study in North Iran. Theor. Appl. Climatol. 133 (3–4), 1119–1131. https://doi.org/10.1007/s00704-017-2244-0.

Ghorbani, M.A., Deo, R.C., Karimi, V., Kashani, M.H., Ghorbani, S., 2018. Design and implementation of a hybrid MLP-GSA model with multi-layer perceptron-gravitational search algorithm for monthly lake water level forecasting. Stoch. Environ. Res. Risk Assess. 1–23. https://doi.org/10.1007/s00477-018-1630-1.

Jahani, B., Mohammadi, B., 2018. A comparison between the application of empirical and ANN methods for estimation of daily global solar radiation in Iran. Theor. Appl. Climatol. 1–13. https://doi.org/10.1007/s00704-018-2666-3.

Kim, Y.H., Yoon, Y., Geem, Z.W., 2019. A comparison study of harmony search and genetic algorithm for the max-cut problem. Swarm Evol. Comput. 44, 130–135. https://doi.org/10.1016/j.swevo.2018.01.004.

Kisi, O., Yaseen, Z.M., 2019. The potential of hybrid evolutionary fuzzy intelligence model for suspended sediment concentration prediction. CATENA 174, 11–23. https://doi.org/10.1016/j.catena.2018.10.047.

https://doi.org/10.1016/j.ecolind.2019.02.013
Received 6 February 2019; Accepted 8 February 2019
Available online 13 February 2019
1470-160X/ © 2019 Elsevier Ltd. All rights reserved.

Moazenzadeh, R., Mohammadi, B., Shamshirband, S., Chau, K.W., 2018. Coupling a firefly algorithm with support vector regression to predict evaporation in northern Iran. Eng. Appl. Comput. Fluid Mech. 12 (1), 584–597. https://doi.org/10.1080/19942060.2018.1482476.

Mohammadi, B., 2019. Letter to the editor "Estimation of sodium adsorption ratio indicator using data mining methods: a case study in Urmia Lake basin, Iran" by Mohammad Taghi Sattari, Arya Farkhondeh, and John Patrick Abraham. Environ. Sci. Pollut. Res. 1–2. https://doi.org/10.1007/s11356-019-04368-y.

Ullah, A., Salehnia, N., Kolsoumi, S., Ahmad, A., Khaliq, T., 2018. Prediction of effective climate change indicators using statistical downscaling approach and impact assessment on pearl millet (Pennisetum glaucum L.) yield through Genetic Algorithm in Punjab, Pakistan. Ecol. Indic. 90, 569–576. https://doi.org/10.1016/j.ecolind.2018.03.053.

Whitley, D., 2019. Next generation genetic algorithms: a user's guide and tutorial. In: Handbook of Metaheuristics. Springer, Cham, pp. 245–274. https://doi.org/10.1007/978-3-319-91086-4_8.

Yaseen, Z.M., et al., 2019. A hybrid bat–swarm algorithm for optimizing dam and reservoir operation. Neural Comput. Appl. 1–15. https://doi.org/10.1007/s00521-018-3952-9.

Babak Mohammadi[1]
College of Hydrology and Water Resources, Hohai University, Nanjing 210098, China
E-mail address: Babak@hhu.edu.cn.

[1] https://orcid.org/0000-0001-8427-5965